July 21, 1925. 1,546,496

H. E. LEPPERT

ELECTRIC SWITCH

Filed June 21, 1921

Fig. 1.

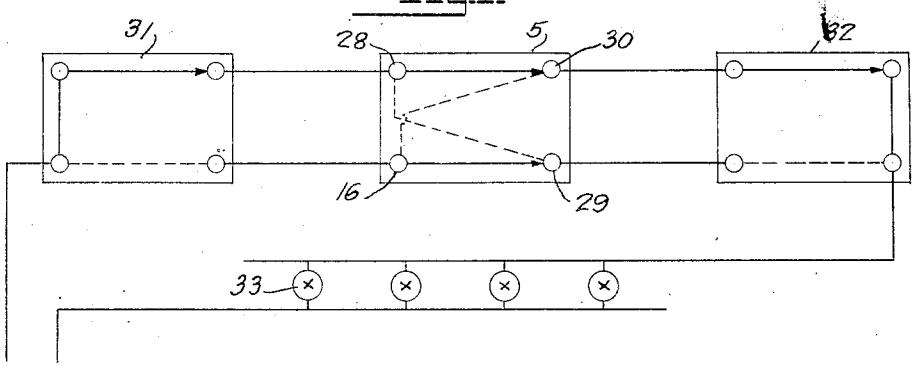


Fig. 2.

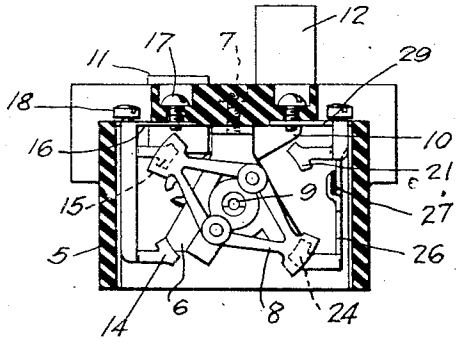
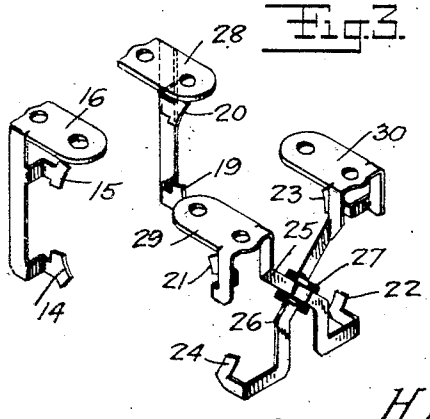


Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY E. LEPPERT, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE TRUMBULL ELECTRIC MFG. COMPANY, OF PLAINVILLE, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

Application filed June 21, 1921. Serial No. 479,197.

To all whom it may concern:

Be it known that I, HENRY E. LEPPERT, a citizen of the United States of America, residing at New Britain, Connecticut, have invented a new and useful Electric Switch, of which the following is a specification.

My invention relates particularly to switches sometimes known as reversing or four-way switches.

The main object is to provide a simple, inexpensive but reliable and efficient mechanism. Another object is to so construct the switch that standard housings and switch mechanism may be used by simply substituting suitable stationary contact members.

Fig. 1 is a diagrammatic view showing two three-way switches and a four-way switch embodying my invention arranged in circuit for controlling translating devices.

Fig. 2 is a sectional view of a switch embodying the improvements of my invention.

Fig. 3 is a perspective view showing the stationary contact members.

The housing 5 may be of porcelain or of other suitable material of suitable design. The switch mechanism proper may be of any suitable character with any suitable type of escapement so as to produce a snap action or quick break. In the form herein shown of the push button type, a frame 6 is detachably secured in the housing by means of one or more screws such as 7. This frame carries two parallel double ended switch members or blades such as 8 (but only one of which is illustrated) which are insulated from each other and pivotally supported on bearings 9. A rocker 10, whose opposite ends are connected to the push buttons 11 and 12, is connected with the switch members in any suitable manner to provide a quick break action.

In opposite ends of the housing are mounted the stationary terminal and contact members, as illustrated in Fig. 3. One member has two contact heads or tips 14 and 15 and an anchorage foot 16 which is secured to the housing, for instance, by a screw 17, and provided with a binding screw 18. The other member at the same end of the housing is provided with contact tips 19 and 20. At the other end of the housing the contact and terminal members are so constructed as to cross from one side to the other. One member has a contact tip 21 at one side opposite the contact tip 15, and a tip 22 on the opposite side in the plane with contacts 19 and 20. The other member has a contact tip 23 in the plane with tips 19, 20 and 22, and another tip 24 in the plane with tips 14, 15 and 21. Contact 22 is connected with 21 through the medium of an arm 25, and contact 23 is connected with 24 through the medium of an arm 26. These two arms are insulated from each other at the point of crossing in some suitable manner, for instance by means of an insulating insert 27. The contact and terminal members are provided with feet 28, 29 and 30, similar to foot 16 for securing them to the housing and providing binding screw connections.

The switch member 8 when in the position shown in Fig. 2, connects contacts 15 and 24, and at the same time the companion switch member (not shown) is adapted to connect the contacts 20 and 22. When the switch members are thus positioned, current passes through the switch as indicated in dotted lines, Fig. 1, from terminal foot 16 to terminal foot 30 and from terminal foot 28 to terminal foot 29. When the switch is thrown so that the switch members connect contacts 14 to 21 and 19 to 23, the circuit through the switch will be, as indicated by the arrows of Fig. 1, namely, from terminal foot 16 to 29 and 28 to 30. The three-way switches 31 and 32 are assumed to be of any suitable type of construction with switch members capable of being thrown to the dotted or arrow positions. It will be seen that when the switch members are in the positions indicated by the full line arrows in Fig. 1, current can flow through the translating devices 33, etc. If either one of the three-way switches 31 or 32 is thrown to the dotted position, the circuit will be broken. If the four-way switch is thrown to the dotted position without operating either of the other switches, the circuit will also be broken. It will also be clear that if the circuit is broken through any one of the three switches it can be completed again by the operation of either one of the remaining switches, or by again operating the same switch. Any or all of the contact members may be made in two parts suitably connected or held together.

I claim:

1. In a four-way electric switch, a housing, two pairs of terminal members secured

in the housing and in the same plane, a binding screw for each terminal member, two contact tips connected to each terminal member, the contact tips of one pair of terminals being integral with their immediately adjacent terminal members, the contact tips of the other pair of terminal members being cross connected so that three of the contact tips are arranged in one side of the housing connected to the terminal members in the same side of the housing, and the fourth contact tip in the same side of the housing is connected to the terminal member in the opposite side of the housing, and switch members adapted to alternately connect diagonally disposed contact tips in the respective sides of the housing.

2. In a four-way push button switch, two pairs of terminals adapted to be secured to a single flat support, each member of one pair having two contact heads integral therewith and in the same plane, each member of the other pair of contacts having a contact head integral with it and in a plane corresponding to the contact heads of one of the first mentioned pair of terminals and a second integral contact head in a plane corresponding to the contact heads of the other first mentioned terminal and a pair of switch blades for electrically connecting the corresponding pairs of said contact heads.

3. In a four-way switch, two pairs of terminals, each member of one pair having two contact heads integral therewith and in the same plane, each member of the second pair of terminals having one integral contact head for cooperating with one of the first mentioned terminals and a second integral contact head for cooperating with the other member of the first mentioned pair of terminals and switch blades for electrically connecting the contact heads of the first mentioned pair of terminals with their corresponding diagonally disposed contact heads of the terminal members.

4. In a four-way snap switch, a housing, a supporting foot secured in one corner thereof, an arm integral with said foot and approximately perpendicular to the plane thereof, said arm terminating in a contact tip, and a second integral arm disposed opposite the first arm and extending obliquely thereto, said second arm terminating in a contact tip positioned in a plane parallel to the first contact tip.

5. In a four-way snap switch, a housing, two coacting terminals mounted therein, said terminals being provided with supporting feet in a common plane, each foot having two integral projecting arms terminating in contact tips lying in planes approximately perpendicular to its supporting foot, the plane of one tip of each terminal intersecting its own supporting foot and the plane of the other tip of said terminal intersecting the supporting foot of the other terminal.

HENRY E. LEPPERT.